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Jackson Wastewater Treatment System Town of Jackson, Wyoming

James Montgomery, Inc., Boise, ID

Prepared for

Environmental Protection Agency, Denver, CO. Region VIII

12 Feb 79

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SUMMARY
FINAL ENVIRONMENTAL IMPACT STATEMENT
JACKSON WASTEWATER TREATMENT SYSTEM
TOWN OF JACKSON, WYOMING

FEBRUARY 1979

U.S. ENVIRONMENTAL PROTECTION AGENCY, REGION VIII, DENVER, COLORADO 80203

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16. ABSTRACT

This is a summary of the final environmental impact statement (EIS) for proposed construction of additional wastewater treatment facilities at Jackson Hole, within Teton County, Wyoming. The U.S. Environmental Protection Agency (EPA), Region VIII, Denver, under the authority of Section 201 of the Federal Water Pollution Control Act Amendments of 1972, is authorized to grant 75 percent matching funds for construction costs of designated wastewater treatment facilities. Sewage discharges as a result of area growth and development together with non-point source runoff have degraded the water quality of Flat Creek. Therefor, additional sewage treatment facilities are needed to meet water quality goals.

The recommended action is to construct aerated lagoons followed by rapid infiltration basins 4 miles downstream of the existing plant. The new facility will enhance development in the undeveloped South Park area. Ground water monitoring will be required.

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Final Environmental Impact Statement
for
Jackson Wastewater Treatment System
Town of Jackson, Wyoming

by

U.S. Environmental Protection Agency
Region VIII, Denver, Colorado

February, 1979

Approved by: Alan Merson
Alan Merson
Regional Administrator

Date: FEBRUARY 12, 1979

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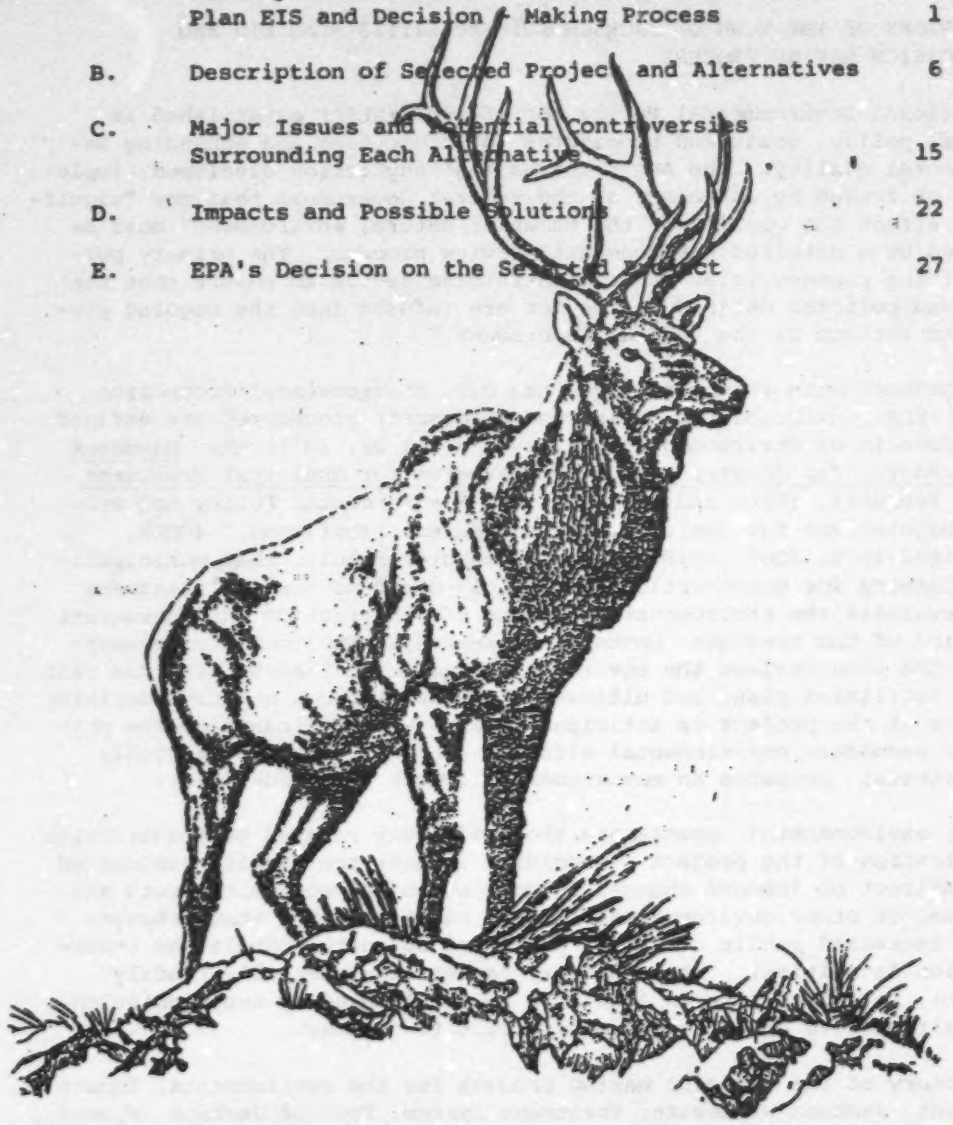

SUMMARY FINAL ENVIRONMENTAL IMPACT STATEMENT
JACKSON WASTEWATER TREATMENT SYSTEM,
TOWN OF JACKSON, WYOMING

A. HISTORY OF THE TOWN OF JACKSON 201 FACILITIES PLAN EIS AND DECISION MAKING PROCESS

The National Environmental Policy Act of 1969 (NEPA) established as national policy, goals and procedures for protecting and enhancing environmental quality. The Act requires that any action developed, implemented or funded by an agency of the Federal Government that may "signifcantly affect the quality of the human or natural environment" must be preceded by a detailed environmental review process. The primary purpose of the process is as "an action-forcing device to ensure that the goals and policies defined in the Act are infused into the ongoing program and actions of the Federal Government."

In accordance with this directive, the U.S. Environmental Protection Agency (EPA) environmental review and assessment procedures are defined in: "Council on Environmental Quality", April 23, 1971; the Handbook of Procedures for Construction Grants Program for Municipal Treatment Works, February, 1976; and the "National Environmental Policy Act Proposed Regulations for Implementing Procedureal Provisions," 40CFR, Parts 1500-1508, June, 1978. These procedures require that municipalities planning for construction of publicly-owned wastewater treatment works evaluate the environmental impacts of construction and subsequent operation of the treatment works, and prepare an environmental assessment. EPA then reviews the environmental assessment along with the rest of the facilities plan, and ultimately issues either a negative declaration; or if the project is anticipated to have significant adverse primary or secondary environmental effects, or is expected to be highly controversial, prepares an environmental impact statement (EIS).

Primary environmental impacts are those directly related to construction and operation of the project. Secondary impacts are usually associated with indirect or induced changes in population and economic growth and land use, or other environmental effects resulting from these changes (i.e., increased public costs for providing adequate schools and transportation facilities). While primary impacts are generally readily apparent, secondary impacts likely to be facilitated by implementation of an alternative are often more difficult to forecast.

The history of the decision making process for the Environmental Impact Statement, Jackson Wastewater Treatment System, Town of Jackson, Wyoming, began in March, 1974, when EPA approved a grant to the Twon authorizing the development of a wastewater facilities plan for a new or expanded sewage treatment plant. The firm of Nelson, Haley, Patterson and Quirk, Inc. (NHPQ), was retained by the Town to develop this plan. Their initial studies indicated the need for an extensive flow and infiltration study to analyze sewer problems. This study was subsequently authorized and funded by EPA.

In October, 1974, the facilities plan was completed by NHPQ. The plan identified consideragle infiltration/inflow problems, hydraulic overloading of the existing treatment facilities, and the need for expansion of the facilities to handle increased flows due to additional resident and tourist populations. The plan recommended as the most cost-effective alternative a mechanical treatment plant at the present plant site at an approximate capital cost of $1.5 million. As a second preferred option, the plan recommended a similar facility west of Jackson near Boyle's Hill at an approximate cost of $2.9 million. The third option involved construction of a waste stabilization lagoon 4.5 miles south of the Town, at an approximate cost of $1.8 million. The facilities plan recognized several problems for these alternatives including the fact that the location for the proposed alternative (upgrading the existing plant) was directly in the path of the Town's current growth expansion. Major consequences of the Boyle's Hill alternative included the requirement for additional high cost lift stations and pumping facilities to serve future South Park development, and complications involving discharge to the Snake River. The stabilization lagoon at South Park involved Game and Fish property for the lagoons, effects on elk populations (approximately 2,000 elk feed in the grounds during the winter months), and secondary growth implications of extending an interceptor into the undeveloped South Park area.

After the Town of Jackson's November, 1974 hearing on the plan, and largely due to EPA's notification to the Town that an EIS would be required if the decision were made to locate the facility in the South Park Elk Feedground, NHPQ was requested to reevaluate the comparative costs of the treatment plant at the present site versus the Elk Feedground alternative. A January 5, 1975 supplement to the facilities plan by NHPQ concluded that the total cost of upgrading the existing treatment plant was less expensive than the South Park lagoon.

On April 30, 1974, the Wyoming Department of Environmental Quality, (DEQ), issued a National Pollution Discharge Elimination System (NPDES) permit to the Town of Jackson. Provisions of the permit included the requirement that the Town submit a final wastewater facilities plan to DEQ by September 30, 1975. On November 4, 1975, following delays in submittal, the Town was issued a Notice of Violation requiring the plan in 30 days. The Town's reply to DEQ indicated that the Town Council did not concur with the recommended alternative of the Facilities Plan, and that the South Park Elk Feedground alternative had been selected by the Council. This decision was based on the following criteria:

1) Lower operation and maintenance costs of a lagoon system;

2) Ultimate unlimited service capacity of a plant located at the South Park Elk Feedground site; and

3) The Town Council's assumption that being public lands, the South Park Elk Feedground site would be available for the Town's use as the location for the selected lagoon treatment system alternative.

On January 30, 1976, following review of the facilites plan by EPA, the decision was made to prepare an EIS on the selected alternative based on anticipated public controversy and potential adverse environmental impacts associated with the South Park Elk Feedground site. On July 23, 1976, EPA contracted the firm of James M. Montgomery, Consulting Engineers, Inc., to assist the agency in preparing the EIS. A "Notice of Intent to Prepare an EIS" was issued by EPA on August 26, 1976, and mailed to all interested individuals and agencies.

As a result of the analysis developed in the Draft Environmental Impact Statement, Jackson Wastewater Treatment System, Town of Jackson, Wyoming, (draft EIS), which concluded that the South Park Elk Feedground option would pose serious legal difficulties in acquiring the land in the feedground and adversely affect the elk herd; that the proposed site was located in the 100-Year floodplain; and would conflict with the goals established by the Wild and Scenic River Study; and that the proposal would "open up" the entire rural South Park area to urban/suburban level development; the decision was made by EPA not to fund the selected South Park Elk Feedground option.

During the draft EIS process, it became apparent that although the majority of the Town Council continued to support the South Park Elk Feedground alternative, several council members and a number of Teton County officials were concerned over potential growth impacts of locating the treatment facility in lower South Park. Town Council members in opposition to the selected alternative maintained the treatment facility would become a County rather than Town of Jackson system. The County, which was involved in the development of an overall Comprehensive Plan and Implementation Program and a Section 208 Water Quality Management Study, did not endorse the selected alternative due to the fact that the treatment plant location and interceptor route were in direct conflict with the proposed comprehensive plan goals and policies supporting the retention of the rural character and ranching economy of Teton County; encouraging compact urban growth with minimization of costs for public services and facilities necessary to support new development; and directing development out of areas subject to flooding and other natural hazards. In addition, at a public workshop conducted by EPA during the EIS process, a large majority of citizen participants rejected the proposal stating reasons including adverse effects of development facilitated by extending sewers into Lower South Park, reservations about lagoons as a method of treatment, and impacts on the elk herd. A majority of citizens polled preferred expansion of the existing Jackson treatment plant.

Following the decision by EPA not to fund the South Park Elk Feedground option, a majority decision was made by Jackson Town Council to locate the new sewage treatment plant at the South Park Road site. This decision was again challenged by two of the three Teton County Commissioners who indicated their opposition to the proposed location. These commissioners maintained their position that a large treatment facility

at the South Park Road site would open South Park to widespread development, and conflict with the goals and policies of the proposed Teton County Comprehensive Plan and Implementation Program. Two conflicting State of Wyoming statutes concerning a Town's authority to go beyond its boundaries to acquire property for liquid waste facilities and County authority to conduct planning and zoning and restrict land users outside city limits further complicated the situation.

The conflict continued through the summer of 1977. Those in opposition to the South Park site favored expanding the existing treatment plant, or construction of a new mechanical plant at Boyle's Hill, contending that the South Park location constituted a "government subsidy of development." Proponents of the South Park site maintained that the valley was going to develop regardless of where the plant was located. They further noted that a central treatment and collection system was preferable to individual septic tank systems in terms of groundwater protection and that the Comprehensive Plan and Implementation Program would control growth in the area.

In early October, 1977, the EPA Regional Administrator met with the Town's mayor and Council and the County Commissioners to discuss the impasse. After reviewing the various advantages and disadvantages of the respective sites, a proposal for limiting the rate of new tap-ins outside the Town of Jackson and the Jackson Planned Expansion District was made. Potential problems with this approach included legal implications of preparing a contract that would bind a legislative body beyond its term of office, and difficulties in obtaining easements under such a plan.

On October 25, 1977, EPA notified the Mayor of Jackson that while it preferred the alternative which included expansion of the existing treatment facilities, the agency could approve a South Park site under the following conditions developed jointly by the Town of Jackson and Teton County:

1. New taps along the proposed interceptor line outside the Town of Jackson should be approved by Teton County, or jointly by by town and county.

2. The maximum number of residential units outside the Town tapping into the line each year should be specified (allowances for an increase each year should also be considered).

3. All residential units tapping into the proposed interceptor should comply with the provisions of the Comprehensive Plan, or at least be compatible with its provisions dealing with physical environmental constraints (i.e., floodplains, steep slopes, and high groundwater).

4. The period of effect of these conditions must be specified (i.e., ten, 20, or 40 years, life of the project, or life of the interceptor).

5. The Town and County should enter into a contractual arrangement with EPA, or develop another mechanism to assure that conditions are binding, including a provision allowing any citizen of Teton County to enforce these restrictions. The restrictions agreed to by the Town of Jackson, Teton County, and EPA could then be incorporated as grant conditions to the Step III construction grant.

Initially, these conditions were not met favorably by either the Town or the County. As a result, the firm of Biscoe, Murray, Maphis and Lamont was hired by EPA on December 14, 1977, to negotiate a settlement. The proposed set of conditions developed by the mediator in the ensuing months included a plant capacity based on a six (6) percent growth for 1995, and "out-of-city" tap-in allocation of 51 equivalent taps per year. Following a legal opinion from EPA on February 8, 1978, which stated that such contractual arrangements were indeed binding, a subsequent meeting was scheduled in Washington, D.C. to sign the proposed agreement. However, at the meeting a significant amendment was substituted to the agreement permitting Teton County to independently establish its own growth management policy as an element of the County's Comprehensive Plan. The amendment stipulated that the tap-in rate be determined no later than the date the treatment plant became operational.

On April 13, 1978, the agreement was signed and all parties conceded to proceed with the updated facilities plan considering only alternative locations near the proposed South Park Road site. C.E. Maguire, Inc., (formerly NHPQ) was selected to update the plan. Due to the difficulty of constructing an outfall line to the Snake River that would remain hidden (a probable requirement of the Wild and Scenic River Study identified in the draft EIS), it was decided to investigate a non-discharging lagoon/rapid infiltration land application system. Also, because land costs are extremely high in the area, the decision was made to consider the option of constructing a mechanical plant (oxidation ditch) in order to reduce these costs and land requirements.

On September 11, 1978, the facilities plan alternatives were presented to the Jackson Town Council, at which time agreement was reached that the South Park Lower Bench site with an aerated lagoon/rapid infiltration system should be the recommended plan. Formal approval of the recommended plan was received from the Town of Jackson by C.E. Maguire, Inc., on September 29, 1978.

In October, 1978, the draft Jackson, Wyoming 201 Wastewater Facilities Plan Update was completed by C.E. Maguire, Inc. The following section outlines the wastewater management alternatives developed in the facilities plan, followed by a brief discussion of the major issues and potential controversies surrounding the respective wastewater treatment alternatives.

B. DESCRIPTION OF SELECTED PROJECT AND ALTERNATIVES

The project selected by the Town of Jackson was developed following the decision by EPA not to fund a deep aerated stabilization pond system in the South Park Elk Feedground because of probable adverse impacts identified in the draft EIS. The project involves construction of an aerated lagoon/rapid infiltration treatment system on approximately 40 acres of land at the South Park Lower Bench site (Alternative 3), (Figure 4). The land has been dedicated to the Town of Jackson for the facility, with an additional ten acres of land for future expansion being offered to the Town for sale.

Two lagoon cells would be aerated, with the third serving as a storage basin. Approximately seven infiltration beds would be built for effluent disposal with material excavated from the east side of Flat Creek. This proposal and the three alternatives considered in the plan also involve a septic tank dump station.

The selection of the lagoon/rapid infiltration treatment alternative was based on the following considerations:

- Lowest average annual and annual operation and maintenance (O/M) costs.
- The use of rapid infiltration beds does not involve a discharge to Flat Creek except during the winter if ice conditions in the beds prevent their use.
- Visual impacts and odor problems are considered minor.
- No problems are anticipated in site acquisition, and the proposed location includes adequate land for future expansion.
- Sludge management requirements are minimal for a lagoon system.
- The site is not located in the 100-year floodplain.
- No major impacts should occur on elk migration, and the project may have significant beneficial effects on fish and waterfowl habitats.
- The system provides for treatment and energy consumption is low.

The project would also require installation of a four mile long (22,000 feet) interceptor pipeline running south through South Park along the general Flat Creek route to the Lower Bench site (Figure 7). This route has the lowest average annual and capital costs to the town. Preliminary discussions with local land owners also indicate that no major right-of-way problems are anticipated.

Other treatment alternatives to the selected project which are evaluated in detail in this EIS document include an aerated lagoon/rapid infiltration system located at the South Park Upper Bench site near U.S. Highway 189 (Alternative 1)(Figure 2). As with the Lower Bench Site, the upper site is not located in the 100-year floodplain. Although the site is owned by the same individual as the selected location, there is reluctance to sell the site due to higher development values, and the potential for adverse visual impacts from the highway.

Treatment Alternative 2 utilizes an oxidation ditch process at the Upper Bench site (Figure 3). This type of plant is typically an activated sludge process that uses a continuously recirculating loop channel or channels (in this case two loop oxidation basins) as an aeration basin. Approximately four (4) acres of land at the Upper Bench location are required for the system, with an additional 15 acres of land needed for sludge burial.

The final treatment alternative (Alternative 4) considered in the facilities plan and described in this document is an oxidation ditch process at the Lower Bench site (Figure 5). However, the proposed method for sludge disposal involved truck transport due to soils and groundwater conditions at th site which prohibited burial or land application.

Comparative treatment works costs for the selected project and alternatives are presented in Table 1. Estimated costs are provided for total capital investment for the treatment facilities, annual operation and maintenance, equivalent annual cost, and average annual cost to the Town of Jackson. The equivalent annual cost represents the costing approach which EPA uses to determine the cost-effectiveness of treatment alternatives. The annual average cost to the Town of Jackson differs from the equivalent annual cost provided, assuming that EPA will participate in 75 percent funding of the aerated lagoon and oxidation ditch system, and 85 percent funding for the rapid infiltration beds as an "innovative process and technique". Thus, the average annual cost to the Town more closely approximates the real cost to the community than does the equivalent annual cost. A detailed discussion of these costs is presented in Section IV of this document.

In addition to the selected Flat Creek route, an alternative interceptor route was considered in the Facilities Plan Update. The County Road alternative route is shown in Figure 6. The route would start at the Town of Jackson and follow a westerly alignment to the County Road south for three miles before turning east to Flat Creek, then south to the Lower Bench site, (approximately 31,490 feet total length), or southeast to the Upper Bench site (approximately 32,920 feet total length). Due to the existing narrow right-of-way along County Road, and limited purpose easements, this option would require additional easements for sewer alignment.

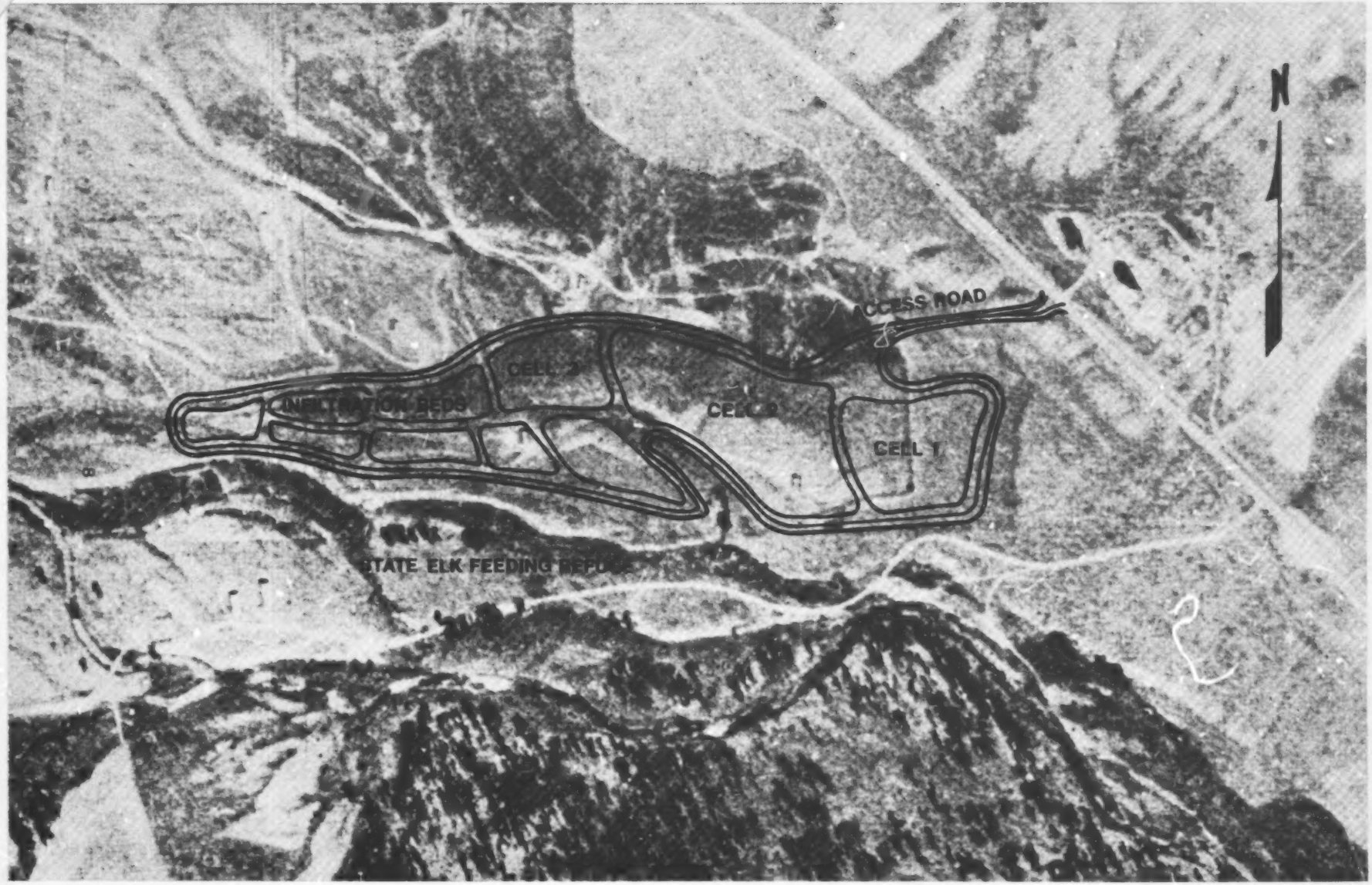

FIGURE 2

ALTERNATIVE 1 - AERATED LAGOONS / RAPID INFILTRATION SYSTEM AT SOUTH PARK UPPER BENCH SITE

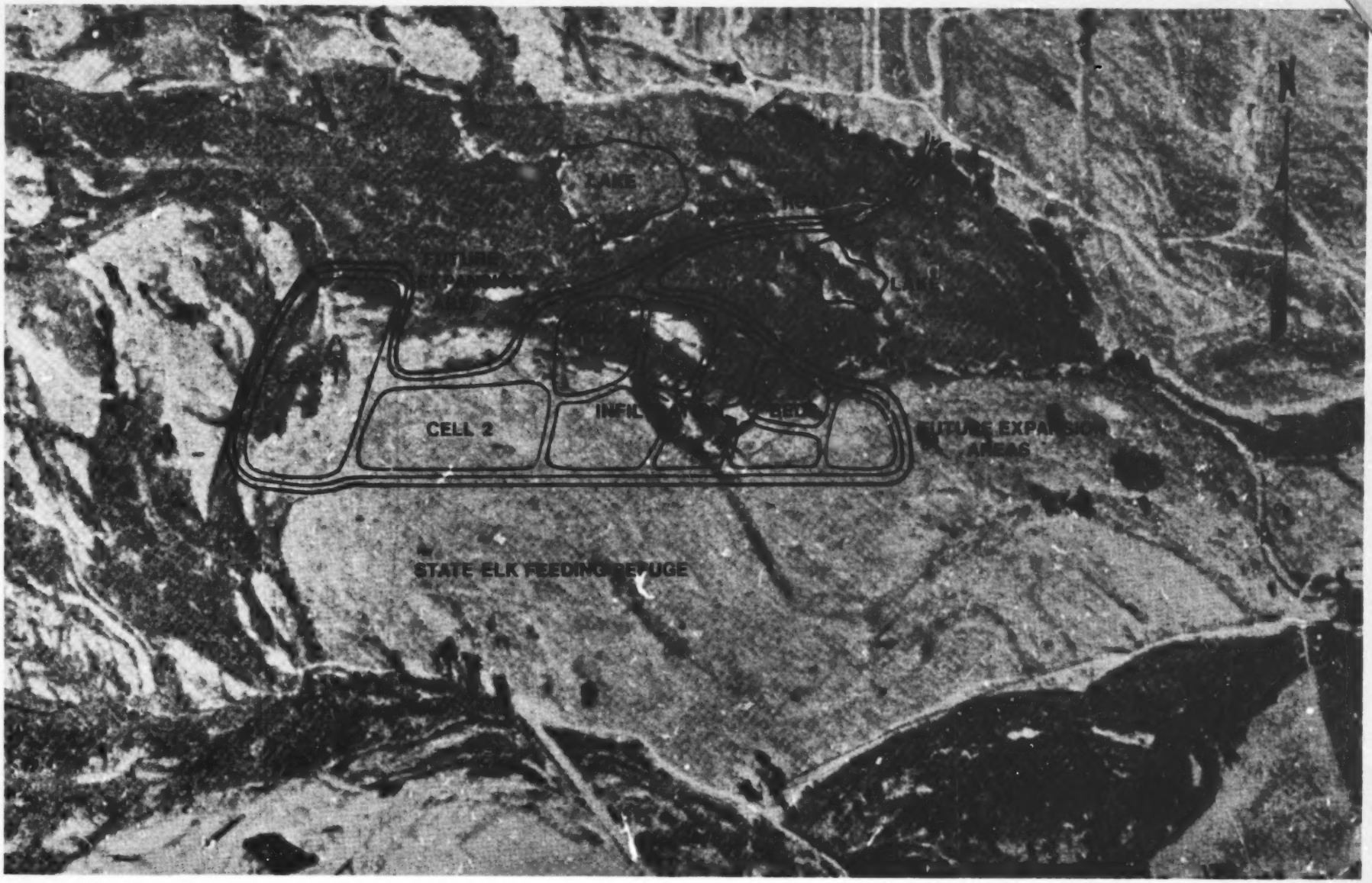

FIGURE 4

ALTERNATIVE 3 - AERATED LAGOONS / RAPID INFILTRATION SYSTEM AT SOUTH PARK LOWER BENCH SITE

FIGURE 6
INTERCEPTOR SEWER LINE
COUNTY ROAD ALTERNATE ROUTE

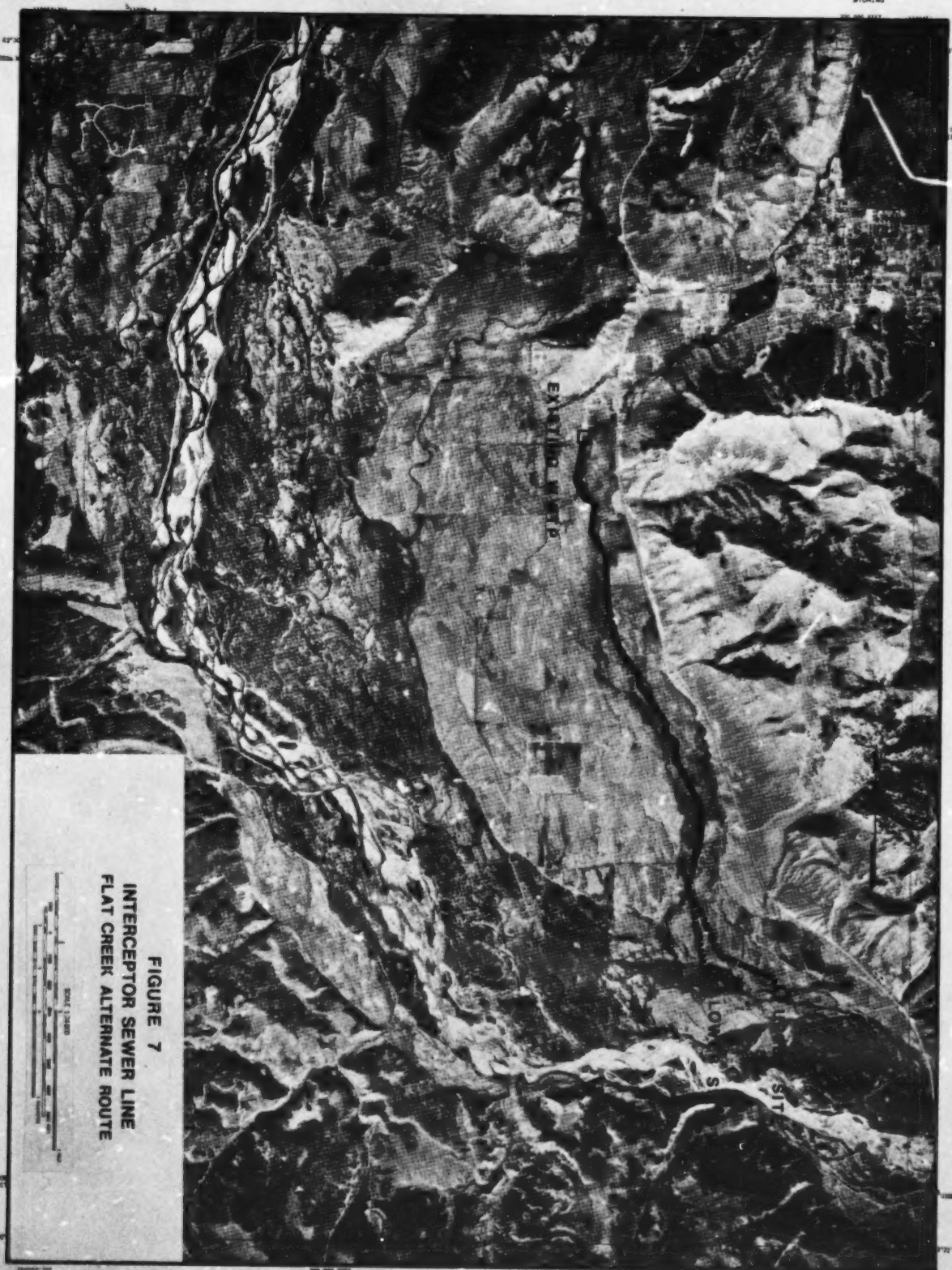
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FIGURE 7
INTERCEPTOR SEWER LINE
FLAT CREEK ALTERNATE ROUTE

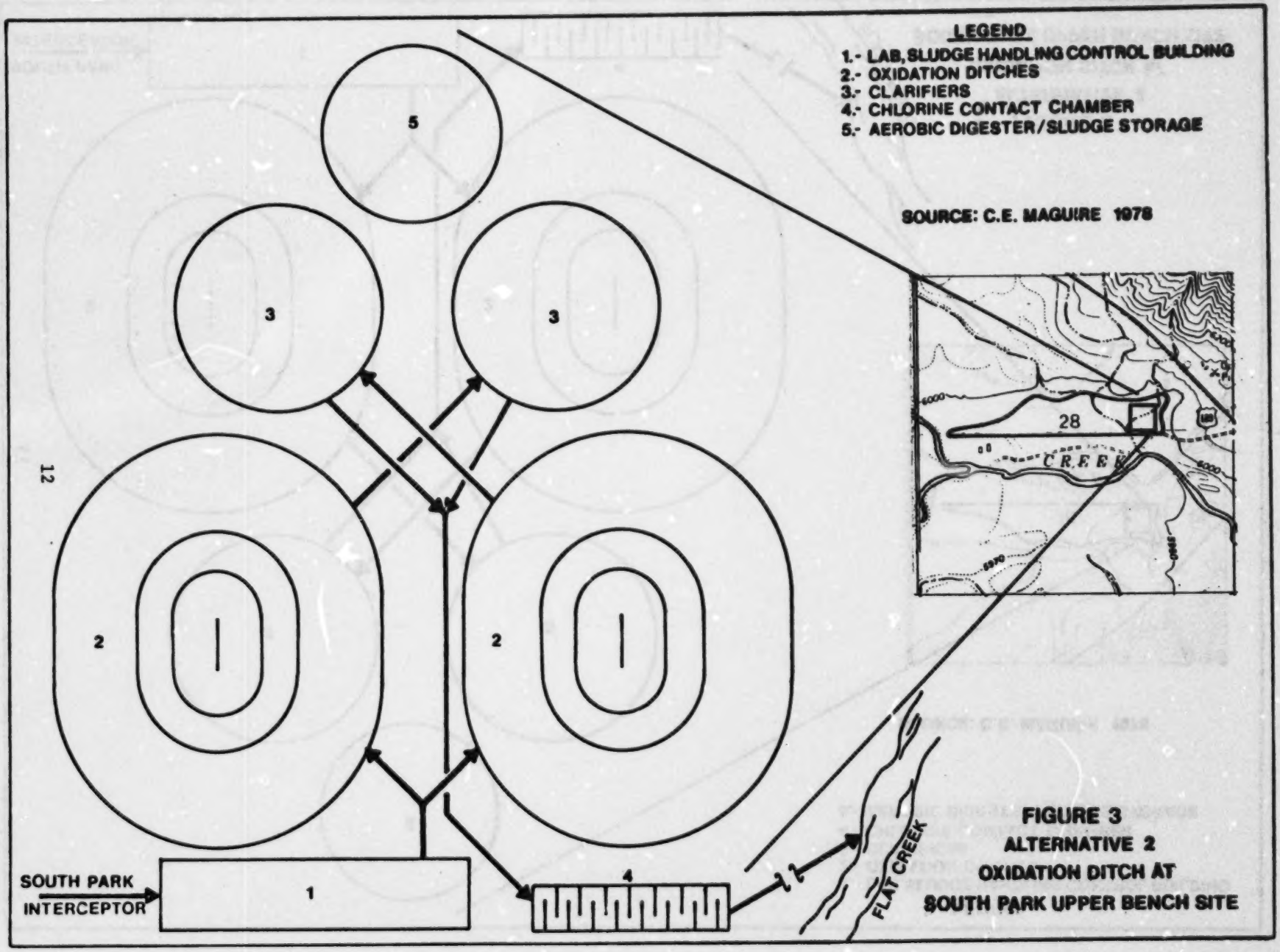

FIGURE 3
ALTERNATIVE 2
OXIDATION DITCH AT
SOUTH PARK UPPER BENCH SITE

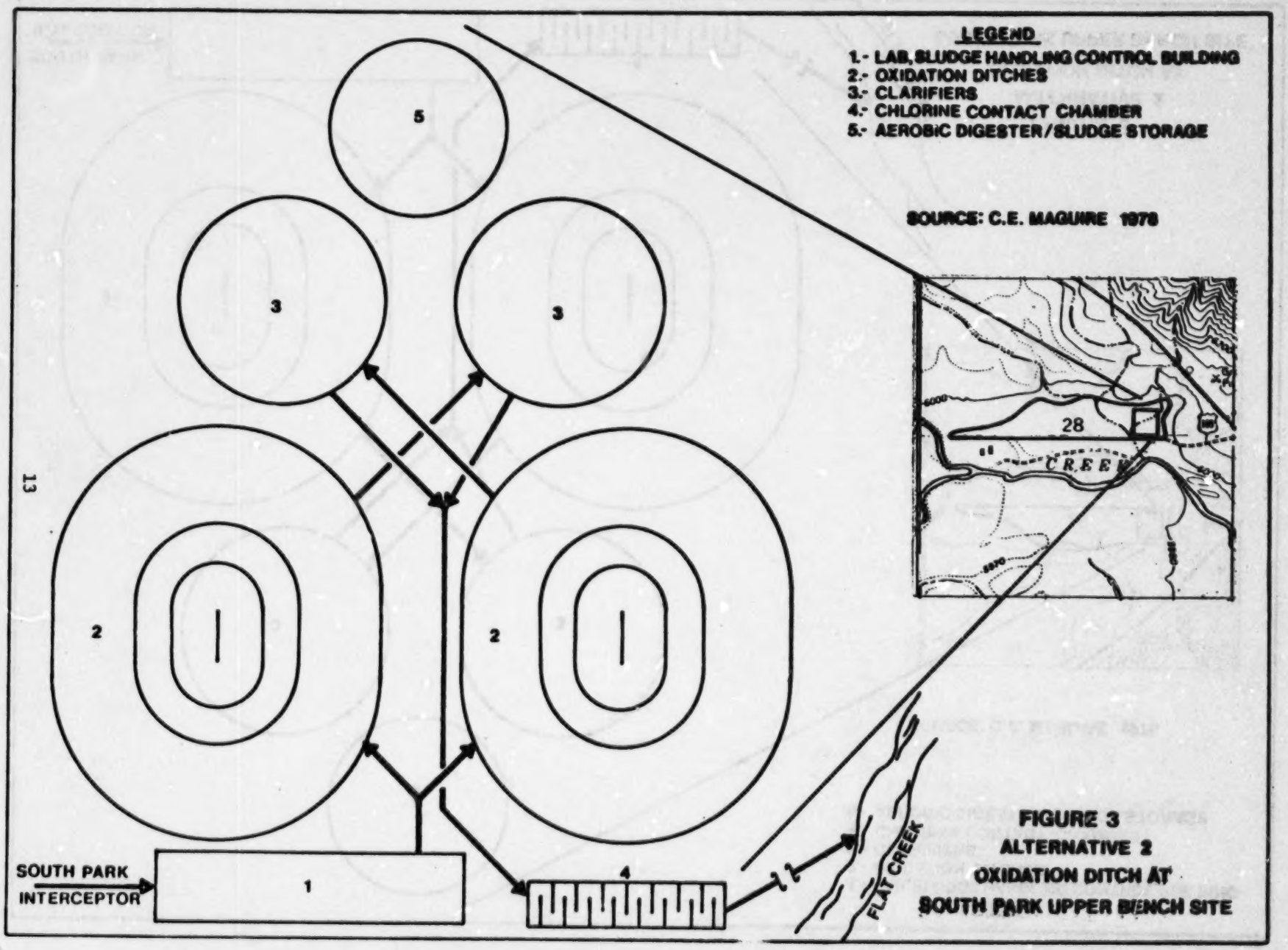

FIGURE 3
ALTERNATIVE 2
OXIDATION DITCH AT
SOUTH PARK UPPER BENCH SITE

TABLE 1.

ALTERNATIVE TREATMENT COST ESTIMATES,
TOWN OF JACKSON 201 WASTEWATER FACILITIES PLAN [1/]

Alternative No.	Description	Capital Cost ($)	Annual O/M Cost ($/YR)	Equivalent Annual Cost ($/YR)	Average Annual Cost to Town ($/YR)
1	Aerated Lagoon/Rapid Infiltration At Upper Bench Site	2,286,000	61,700	271,200	140,200
2	Oxidation Ditch At Upper Bench Site	2,903,000	123,000	389,100	198,600
3	Aerated Lagoon/Rapid Infiltration At Lower Bench Site	2,342,000	61,700	277,100	110,800
4	Oxidation Ditch At Lower Bench Site	2,801,800	123,000	379,800	189,100

[1/] Source: C.E. Maguire, October, 1978

Comparative cost estimates of the two interceptor routes for the Upper and Lower Bench sites are presented in Table 2. These estimates assume EPA will participate in 75 percent of the funding of the sewer interceptor line. Costs are largely determined by interceptor length.

C. MAJOR ISSUES AND POTENTIAL CONTROVERSIES SURROUNDING EACH ALTERNATIVE

A detailed discussion of the major issues and potential controversies surrounding the selected project and proposed alternatives is presented in Sections IV and V of this document. These impacts generally fall into seven major categories:

1) Surface and groundwater quality;
2) Land use and growth versus the Tri-Party, Tap-In Agreement;
3) Secondary effects on public services and facilities;
4) Public attitudes and preferences;
5) Costs;
6) Odor problems and visual intrusion; and
7) Effects on important fish and wildlife resources.

A brief narrative on the impacts of the selected project for those categories is included in this section, followed by a summary discussion of the impacts for the alternatives identified in the Facilities Plan Update.

Selected Project (Aerated Lagoon/Rapid Infiltration Lower Bench Site, Flat Creek Interceptor Route

- Surface and groundwater quality.

  An aerated lagoon/rapid infiltration system at the Lower Bench site would not involve discharge to Flat Creek under normal operating conditions. Therefore, effluent limits identified by EPA in the draft NPDES permit for Flat Creek would apply only during possible winter discharge (in the event the infiltration basins fail due to icing). While the selected project would undoubtedly improve Flat Creek water quality, the proposed site is characterized by high groundwater conditions (0.6 to 6.2 feet below the surface). For this reason, careful design and management of the system to avoid problems with groundwater mounding, and a system of groundwater observation wells and monitoring program will be required to better define the recharge area. It should also be noted that by removing the effluent discharge to Flat Creek, flows will be reduced by approximately 1.6 cfs in the reach of the stream between the existing treatment plant and the proposed Lower Bench site.

- Land use and growth versus the Tri-Party, Tap-In Agreement.

  The potential impacts of locating the Town of Jackson wastewater treatment plant at the Lower Bench site are in part

TABLE 2.

ALTERNATIVE INTERCEPTOR ROUTE COSTS,
TOWN OF JACKSON 201 WASTEWATER FACILITIES PLAN. 1/

Interceptor Route	Capital Cost ($)	Annual O/M Cost ($/YR)	Equivalent Annual Cost ($/YR)	Average Annual Cost to Town ($/YR)
County Road Upper Bench	3,627,300	14,510	344,480	87,150
County Road Lower Bench	3,497,700	13,990	332,170	84,040
Flat Creek Upper Bench	2,197,300	8,790	208,670	52,790
Flat Creek Lower Bench	2,065,900	8,300	196,190	49,650

1/ Source: C.E. Maguire, October, 1978

dependent upon out-of-city tap-in priorities and the number of out-of-city taps developed Teton County in accordance with the Tri-Party, Tap-In Agreement. Other political actions which have not been fully determined and could potentially affect local growth and develop ment patterns would be the decision by the County to fund additional wastewater treatment capacity beyond the proposed 3.5 mgd at its own expense; any determination by the Town and County to amend the existing Jackson Planned Expansion District (this area is excluded from the "out-of-city taps" definition, and is subject to the Town's development standards); or any amendments to the Teton County Comprehensive Plan and Implementation Program which would result in significant revisions to existing land use district boundaries, authorized uses, or reductions in development permit requirements (minimum acreages) and development standards. For example, should an excessive number of annual out-of-city taps be allowed, it is likely that the planned wastewater facility would not be capable of adequately treating the projected flows through the year 1995, given the expected six (6) percent growth rate. This situation would result from additional development in areas of the South Park where such development is currently limited due to wastewater treatment constraints (i.e., high groundwater, septic tanks). The close proximity of the Flat Creek Interceptor would further complicate the situation. Likewise, any decision by the County to increase the treatment plant capacity in combination with a high annual number of out-of-city taps could have a major impact on land development patterns in South Park in terms of a potentially increased service area and subsequent pressure for growth resulting from fewer development restrictions (i.e., wastewater treatment).

- Secondary effects on public services and facilities

Numerous studies have shown that changes in land use do occur as expanded centralized sewer facilities replace septic tanks. These changes are invariably accompanied by substantial requirements for additional public services and facilities. The decision to locate the Town of Jackson wastewater treatment plant at the South Park Lower Bench site will place additional pressure on the County's ability to provide adequate schools, police and fire protection and transportation facilities; as well as increase costs for those services.

The service most likely to be adversely affected as a result of implementation of the selected project would be schools. During the past ten years, school attendance has increased an average of 1.93 percent a year, considerably above the national norm. As a result, the three existing school facilities serving the Town of Jackson and South Park area are at or

near capacity, resulting in the need for a new high school which is currently under construction at an estimated cost of $4.5 million. Discussions with Jackson School District officials indicate that the continuation of recent development trends in lower South Park will result in the need for an additional elementary facility in the area within the next three years. Other important public services not paid for by developers as a portion of the total development costs which will undoubtedly be impacted by the proposed project include police and fire protection. While the Jackson Police Department and the Teton County Sheriff's Office acknowledge that additional growth in the South Park area will increase department responsibilities, both indicated they anticipated no major problems with serving the additional population, provided their respective manpower forces were proportionally increased with the growth. The level of growth potentially facilitated by central sewer availability may also result in the need for the County to require public water for new subdivisions sufficient to provide adequate fire protection. This requirement is currently being imposed by the Town of Jackson within one (1) mile of its jurisdictional boundaries.

- Public attitudes and preferences.

  At the second of two public workshops held in connection with preparation of the draft EIS, a majority of citizens attending the session rejected the proposed South Park Road location. The most common reason given was potential adverse effects of additional development in Lower South Park facilitated by sewer availability; and the unavailability or high costs of land in the area for locating the proposed stabilization ponds. Although the results of the recent Jackson Town Council and Teton County Commission races tend to indirectly contradict this opinion to some degree (winners of both races generally indicated opposition to limiting the number of sewer hookups in South Park), the conclusions of the workshop along with those of an earlier summary questionnaire on the proposed Comprehensive Plan indicating a desire for controlled growth would seem to represent the basic views of the area's residents. Approximately 40 acres of land have been dedicated to the Town for the proposed project, with an additional ten (10) acres of land for future expansion available for sale. Costs for acquiring the future expansion land would probably be minimal.

- Project costs.

  Comparative cost estimates for the selected treatment works and alternatives are shown in Table 1. Costs are presented as capital costs, annual O/M costs, equivalent annual cost, and average annual cost. Total capital costs for the selected

project are approximately $2,342,000. This figure is approximately $540,200 less than for the oxidation ditch alternative at the Lower Bench site. Average annual costs to the Town are lowest for aerated lagoon/rapid infiltration system at the Lower Bench site. This is due in part to the assumption that EPA will fund 85 percent of the infiltration beds as innovative or alternative wastewater treatment processes, and that the 40 acres of land at the Lower Bench site needed for the lagoons would be donated to the Town of Jackson. Annual O/M costs are also considerably lower for the aerated lagoon/rapid infiltration alternatives (approximately one-half of the oxidation ditch alternatives).

Comparative costs for the two interceptor alignments are presented in Table 2. These costs are largely determined by size, length, depth and trenching conditions. Costs shown assume 75 percent EPA participation, and are for total capital investment, annual O/M, equivalent annual cost, and average annual cost to the Town of Jackson. Total capital costs for the Flat Creek route to the Lower Bench site are approximately $1.4 million less than the County Road Alignment. This is largely due to the County Road route being 9,490 feet longer, and requiring approximately four miles of resurfacing following trenching and alignment. The Flat Creek route to the Lower Bench site also offers the lowest average annual cost ($49,630/year) and lowest capital cost to the Town ($516,474).

- Odor problems and visual intrusion.

  An aerated lagoon/rapid infiltration system will undoubtedly periodically produce some odor nuisance. However, the potential for seasonal nuisance is considered slight, provided aeration equipment is properly functioning. The immediate location area is also very sparsely populated. Although the proposed project will require approximately 40 acres of land for construction of the lagoons and infiltration beds, the Lower Bench site is better shielded from the views of local residences than the Upper Bench site, and is not highly visible from the existing road. Extensive landscaping is planned to further minimize visual impacts of the facility on the residence to the north.

- Effects on important fish and wildlife resources.

  Excavation work along the Flat Creek interceptor alignment will undoubtedly create some short-term turbidity problems in Flat Creek, with corresponding impacts on the local fishery resources. However, contract specifications and compliance with the requirements of regulatory agencies (i.e., sedimentation basins to remove suspended solids before discharge to the

stream or for irrigation uses, diffusers to reduce soil erosion and ditchbank slumping) will minimize impacts on water quality and aquatic life. The adjacent Flat Creek wetlands habitat would be expected to be enhanced through the construction of several small lakes along the watercourse. The lakes would be created as a result of excavation of materials for construction of the infiltration beds. The project is not expected to have major effects on the elk migration, but will require the relocation of a gate at the State Elk Feedground to allow migrating elk access to the feedground.

Rejected Treatment Alternatives

- Alternative 1- Aerated Lagoon/Rapid Infiltration Upper Bench Site.

  This alternative would utilize the same treatment process as previously described for the selected project. However, the treatment facilities would be located at the Upper Bench site. Water quality impacts of this alternative would also be similar to those discussed for the proposed project. A major advantage of this site would be the greater depth to groundwater which is approximately 15 feet. This location would not require the importation of fill material for construction of the infiltration beds. Effects of this proposal on land use and growth patterns in South Park, as well as future public services and facilities requirements, would be identical to those for the Lower Bench site, and determined by the effectiveness of the Teton County Comprehensive Plan and Implementation Program to guide and manage future development. Although capital, O/M and equivalent annual costs are essentially the same for Alternative 1 and the proposed project, the average annual cost to the Town of Jackson is approximately $29,400 more for the Upper Bench location due to the requirement to purchase the 40 acres for the site. This land is not eligible for EPA funding assistance. Additional problems at the site involve available land area for future expansion which is severely limited. Visual impacts associated with the Upper Bench site are much greater than those for the lower site due to its close proximity to U.S. Highway 189. This alternative would not have significant impacts on elk migration or waterfowl habitat.

- Alternative 2 - Oxidation Ditch at South Park Upper Bench Site.

  Alternative 2 would involve the use of an oxidation ditch treatment process at the Upper Bench site. This system involves an extended aeration type of activated sludge process using two continuously recirculating closed loop channels as aeration basins. The configuration also involves two clari-

fiers, an aerobic digester/sludge storage basin, and chlorine contact chamber. Unlike the proposed project, this option would involve discharge to Flat Creek. The primary water quality impacts for this system include significant decreases in BOD, fecal coliform, ammonia nitrogen, total phosphate and total suspended solids in comparison to the present situation, due to improved treatment efficiencies and effluent limitations described in the Town's NPDES permit. It does not appear that recommended phosphorus concentrations or instream toxic ammonia levels for cold water fisheries would be exceeded at design flow. The alternative would require only four acres of land, with an additional 15 acres needed for sludge burial or approximately 320 acres for land application. The location of the facility and its impacts on South Park land use and development patterns, and public services and facilities requirements, are the same as those described for Alternative 1. Capital cost for this treatment alternative is approximately $561,000 more than for the selected option. Operation and maintenance and average annual costs to the Town of Jackson are also substantially higher for this alternative. Visual effects of the facility would be lessened through extensive landscaping. The potential for odor problems would be greater for this system than the selected project due to the higher potential for equipment breakdown, particularly during cold weather operation. Elk migration would not be affected measurably by this option.

- Alternative 4 - Oxidation Ditch at the Lower Bench Site.

  The primary and secondary impacts of construction of an oxidation ditch mechanical treatment facility at the Lower Bench site would be the same as those for Alternative 2. The system would be designed to meet NPDES effluent limitations. Compliance would also be met for monitoring and any additional requirements defined in the permit. Flat Creek water quality would be expected to improve. Land use changes and development patterns would be determined by comprehensive planning goals and policies and development regulations, and the annual number of out-of-city taps allowed by the Town and County. Costs are comparable to those for Alternative 2. Potential visual intrusion is considered less at this site due to its remoteness. Sludge hauling problems are somewhat greater than for the upper Bench site because access is through South Park and private lands, rather than directly to the highway.

Rejected Interceptor Route

The County Road interceptor routes to the Upper and Lower Bench sites were rejected on the basis of comparative costs, route availability, and construction impacts. Total capital costs for the County Road route to

the Lower Bench site, for example, were approximately $1.4 million more than for the Flat Creek Lower Bench route. This difference is due to the County Road route being approximately 9,500 feet longer, and an additional requirement to resurface approximately four miles of County Road as a portion of the project. Discussions with land owners along the County Road routes also indicated a potential problem in securing sewer line easements. Construction along the County Road would also result in disruption and rerouting of local traffic.

D. IMPACTS AND POSSIBLE SOLUTIONS

The major issues and potential controversies are discussed in detail in Section V of the Final EIS document. These impacts and possible solutions in their approximate order of significance are briefly described in the section that follows. It should be noted that the "Tri-Party Agreement," which must be considered a major issue in the EIS process, is not discussed as an issue by itself, but rather in the context of how it may affect several of the issues identified in this section.

1) Flat Creek Water Quality

Problem - Flat Creek water quality is significantly impacted by discharge from the Jackson Treatment plant. Water quality data collected by the Teton County 208 Program and other studies indicate that fecal coliform standards are frequently exceeded downstream from the plant, with ammonia and total phosphate concentrations also showing substantial increases. The existing treatment facilities are not capable of meeting the draft NPDES permit requirements established by EPA.

Solution - The Jackson, Wyoming 201 Wastewater Facilities Plan Update (October, 1978) identified four alternative wastewater treatment systems for the Town of Jackson. Selection and implementation of one of these alternatives would provide the Town of Jackson with treatment facilities designed to adequately serve the community through 1995.

Option 1 - This option involves selection of a no-discharge alternative. An aerated lagoon/rapid infiltration system at either the Upper or Lower Bench site would not involve discharge to Flat Creek, and also would not be subject to effluent limitations identified in the draft NPDES permit. The discharge of effluent for current estimated peak wastewater flows (approximately 1.59 mgd) treated by the Jackson treatment plant would be eliminated. This option would significantly improve Flat Creek water quality. The dilution factor for groundwater flow would be adequate to protect groundwater quality.

Option 2 - A second option would be the selection of an oxidation ditch system located at the Upper or Lower Bench site. This sytem would discharge to Flat Creek, and involve additional sludge dis-

posal requirements. Treatment efficiencies would be improved significantly over the existing system. However, this option would still involve discharge to Flat Creek. Estimated 1995 flows are projected at 3.50 mgd.

Conclusion - Maximum protection of Flat Creek water quality is provided by the no-discharge alternative. The level of treatment achieved by the system, combined with the background quality and 5:1 dilution factor would not be expected to result in any violations of drinking water standards for the groundwater. A groundwater monitoring system would be required at the site to measure background levels and water quality impacts.

2) Land Use Changes in South Park and the Teton County Comprehensive Plan and Implementation Program

Problem - The proposed location for the selected treatment facility will provide the potential for increased urban type development in South Park due to the availability of central sewer facilities. This growth potential is in direct conflict with the goals and policies of the Teton County Comprehensive Plan and Implementation Program which generally encourages the preservation of the "ranching lifestyle and economy," designates South Park for low density development, and specifies that sewage treatment plants and other facilities should be located where they will not foster scattered development. The potential growth impacts of the proposed location are also contrary to the public opinion shown in polls conducted by the County.

Solution - In order to minimize this conflict, the Town of Jackson, Teton County and EPA have entered into a tri-party agreement which attempts to restrict the number of out-of-city tap-ins to the treatment plant. The number of out-of-city tap-ins by the County must be determined prior to completion of the facilities.

Option 1 - Select the proposed alternative (South Park Lower Bench site) for construction of an aerated lagoon/rapid infiltration treatment system. The selection of an oxidation ditch treatment process would have similar effects on land use development patterns.

Option 2 - Study the feasibility of a new location for the treatment plant in closer proximity to the Town of Jackson and the proposed Jackson Expansion Area. One such option would be the Boyle's Hill location which was identified in the draft EIS.

Conclusion - The Facilities Plan Update has identified the South Park Lower Bench site with an aerated lagoon/rapid infiltration system as the most cost-effective, environmentally sound, and publicly acceptable alternative. The Jackson Town Council generally supports this recommendation. Similarly, a majority of the Teton County Commission (1979 elected term) have also indicated

support. This support, coupled with a carefully defined out-of-city tap-in rate, will result in an implementable solution to the area's wastewater treatment needs. However, the decision will also probably result in the need to amend the County's Comprehensive Plan and Implementation Program to the theme of urbanization of South Park. Most of this area, which includes approximately 6,500 acres of undeveloped land, is currently planned for a maximum development of one (1) unit per six (6) acres, or not more than one (1) unit per three (3) acres if groundwater levels drop below three (3) feet upon removal of irrigation. These density limitations are based primarily on wastewater treatment constraints, which would be effectively removed by central sewer availability.

3) Costs of the Wastewater Systems

Problem - Minimizing federal and local expenditures for construction and operation and maintenance of a wastewater treatment facility is a primary goal in the overall facilities planning process. The use of innovative or alternative wastewater treatment processes and techniques can also provide additional federal funding assistance (85 percent of the cost of construction as opposed to 75 percent for conventional treatment system). Cost information for the four treatment alternatives and alternate interceptor alignments analyzed in the Facilities Plan Update are presented in Table 3. These costs are based on a 1995 design flow of 2.65 mgd, plus capacity to handle uncorrected infiltration (approximately 0.85 mgd).

Solution - A financing plan that provides the least expensive, most effective and publicly acceptable solution to the collection and treatment of the Town's wastewater should be selected and implemented. These criteria would tend to eliminate several of the options analyzed in the Facilities Plan Update from further consideration.

Option 1 - Implementation of Alternative 3, an aerated lagoon/rapid infiltration system at the Lower Bench site would provide the most financially feasible option to the Town of Jackson. This option involves a total estimated capital cost of $2,342,000, and an average annual cost to the Town of Jackson of $110,800. This option also provides the lowest annual O/M cost of the proposed alternatives. The Flat Creek interceptor route to the Lower Bench site has the lowest capital cost and average annual cost to the Town of Jackson.

Option 2 - Selection of the oxidation ditch treatment process at the Lower Bench site would provide an effluent system at an estimated cost of approximately $2.8 million. The average annual cost to the Town of Jackson for this option would be approximately $190,000. Annual O/M costs (approximately $123,000) are higher for this mechanical process.

Conclusion - Implementation of Alternative 3 would minimize costs to the Town of Jackson. Under this option, the majority of land area required for the facility would be dedicated to the Town. Also, the rapid infiltration process would qualify for 85 percent EPA funding assistance.

3) Associated Public Services and Facilities Investment

Problem - The relationship between sewer service and land use development patterns, and the influence of the pair on public services and facilities investment is a difficult problem to address. Without effective land use controls, the location of an interceptor may result in scattered development patterns, and excessive costs for providing adequate schools, police and fire protection, and transportation facilities.

Solution - The selection of a wastewater management alternative which is appropriately sized to serve the projected 1995 population, and more importantly one that includes a reasonably defined service area, will reduce future community services and facilities costs.

Option 1 - The Town of Jackson and Teton County can establish a mutually acceptable "community service area" for the proposed wastewater treatment facilities. This service area would take into account all public services and facilities. Providing sewer service outside this area would be subject to Town and County approval, and would be required to comply with the overall comprehensive planning programs of these entities.

Option 2 - The Town of Jackson and Teton County can establish an annual out-of-city tap-in agreement as part of Teton County's Comprehensive Plan and Implementation Program. This agreement would take into account fiscal and other forms of impact upon the Town and County, scenic preservation activities, schools and other community service systems.

Conclusions - In order to minimize future public services and facilities investment, the Town of Jackson and Teton County must develop an annual out-of-city tap-in agreement as part of the County's Comprehensive Plan and Implementation Program. This agreement should include the definition of a mutually acceptable "community service area," and be based on the six (6) percent growth figure established in the Facilities Plan. Priorities for out-of-city tap-ins must be defined. These priorities may be defined as "phased expansion areas," and should be determined on the basis of the community's ability to provide all necessary services and facilities, as well as compatibility with local comprehensive planning programs.

5) Odors and Visual Intrusion

Problem - The present wastewater treatment plant has objectionable odors and is unsightly. Consideration of aesthetics in the design, construction, and operation of wastewater treatment works is necessary to minimize significant adverse effects.

Solution - A successful wastewater facility site design makes use of the existing and developed features of the site to satisfy the demands of the treatment facility and its neighbors. Selection of a site removed from present and future residences will help to reduce visual and odor problems. Proper design and operation minimize odor problems.

Option 1 - Select an oxidation ditch or aerated lagoon/rapid infiltration treatment alternative at the Upper Bench site. This option, as well as Option 2, would include development of a site plan, landscaping, and adequate buffer areas.

Option 2 - Select an oxidation ditch or aerated lagoon/rapid infiltration treatment alternative at the Lower Bench site.

Conclusion - The Lower Bench site would be less visually impacted than the Upper Bench site, due to the latter's closer proximity to U.S. Highway 189. Similarly, potential odor problems would also probably be less at the Lower Bench site due to the remoteness of the location. It should also be noted that the Lower Bench site does provide adequate land area for future expansion of the facilities. Approximately $60,000 has been included in the proposed budget for the recommended wastewater management plan (Alternative 3) to landscape and fence the facility.

Particular attention in the Step 2 design phase of the project should be directed to building orientation and aesthetics, access, and landscaping for the facilities. Public input during the Step 2 design phase is welcomed. The feasibility of utilizing the proposed interceptor right-of-way for potential recreational opportunities should also be considered.

6) Wild and Scenic River Study

Problem - The section of the Snake River flowing from Teton National Park to Palisades Reservoir is a candidate for classification as a "Wild and Scenic River" under the provisions of the Wild and Scenic River Act (P.L. 90-542). The designation potential identified for the river is "recreation." An important criteria in the evaluation of wastewater treatment options for the Town of Jackson must be the selection of an alternative which would not damage the potential for this designation.

Solution - The Town of Jackson should consider only those alternatives which would not jeopardize the eventual designation of the Snake River as a "recreation" classification. This designation potential has been identified, and it is currently assumed that the final statement to be issued during the summer of 1979 will be for such a classification. Management objectives of the classification include optimization for public use, and permitting new structures for habitation and public use in close proximity to the river.

Option 1 - The Town of Jackson can select the proposed alternative (aerated lagoon/rapid infiltration system at the Lower Bench site), or the same treatment system at the Upper Bench site. Neither of these options involve an outfall line and discharge to the Snake River. The alternatives also would not require extensive architectural treatment identified for several of the options discussed in the draft EIS to adequately reduce the visibility and obtrusiveness of an outfall line.

Option 2 - Select either of the two oxidation ditch treatment alternatives which involve a discharge to Flat Creek.

Conclusion - While none of the facilities planning options involve a discharge to the Snake River, the two rapid infiltration treatment Alternatives identified in the Facilities Plan Update provide the best degree of protection to Flat Creek and the Snake River water quality. The design engineer has projected a 5:1 water quality dilution ration between the groundwater and infiltrated wastewater. The proposed level of treatment provided by the rapid infiltration system, and the projected dilution factor, would appear to be sufficient to adequately protect local surface water quality for the proposed "recreation" classification currently being considered under the Wild and Scenic River Act.

E. EPA'S DECISION ON THE SELECTED PROJECT

EPA and the Wyoming Department of Quality propose to approve in thirty days the Jackson Facility Plan update. This grant approval will allow the Town of Jackson to authorize its consulting engineer to complete engineering plans and specifications for the selected treatment alternative of a lagoon/rapid infiltration system at the lower bench site utilizing the Flat Creek interceptor route. This approval includes the following grant conditions:

1. The provisions agreed to in the April 13, 1978, Tri-Party agreement are binding conditions on the Town of Jackson, Teton County, and EPA. Said agreement in its entirety shall be conditions to this acceptance of this grant. One major provision of the April 13, 1978, agreement is the completion of Teton County's out-of-city tap in provisions. This policy statement is due to EPA prior to sewage facility operation.

According to the present schedule, these facilities should be operational by July 1, 1980. The County is reminded that its out-of-city tap in policy is due by that date or earlier.

2. EPA has determined additional groundwater data is necessary in order to complete the design for the rapid infiltration basins. The Town of Jackson will be required to direct its consultant to obtain depth to groundwater measurements during the seasonal high (May & June of 1979), to drill a new well and run an aquifer pump test, and to determine the rate of groundwater flow by dye tests. EPA shall require that the minimum separation between the seasonal high groundwater and the bottom of the infiltration basin shall be three feet. No additional facility plan work is required since these additional items can be accomplished under the Step II grant. This delay in completing the design for the infiltration basin will not delay the interceptor and lagoon portions of the facility. EPA expects that the interceptor and lagoon design will be submitted to the Wyoming Department of Environmental Quality no later than July 1, 1979. If the additional ground water data indicates conditions are so adverse so as not to provide the expected dissipation of effluent, an alternative site may need to be acquired. Thus, if the lower bench site were determined to be unsuitable for rapid infiltration, the upper bench site may have to be acquired by the Town.